R E P O R T R E S U M E S

ED 018 306 24 RC 002 411

THE NATURE OF A DISCIPLINE-CENTERED CURRICULAR APPROACH.

BY- MACCIA, ELIZABETH STEINER
OHIO STATE UNIV., COLUMBUS, BUR.EDUC.RES.AND SER.

REPORT NUMBER CRP-HS-082 PUB DATE 64
REPORT NUMBER OP-64-166
EDRS PRICE MF-$0.25 HC-$0.84 19P.

DESCRIPTORS- BEHAVIOR CHANGE, *CURRICULUM PLANNING, CURRICULUM DESIGN, *CURRICULUM, CURRICULUM DEVELOPMENT, *DISCIPLINE, FEDERAL PROGRAMS, INSTRUCTION, IMPROVEMENT, LEARNING, PROBLEMS, TEACHING,

IN ITS MOST GENERAL SENSE DISCIPLINE MEANS INSTRUCTION, WHICH IS A RELATIONAL TERM REQUIRING TWO THINGS FOR ITS EXEMPLIFICATION-- TEACHING AND LEARNING. INSTRUCTION INVOLVES BRINGING ABOUT BEHAVIORAL CHANGE THROUGH REGULATED BEHAVIOR, THEREFORE DISCIPLINE ALSO MEANS REGULATION. DISCIPLINE AS A RULE OF PRACTICAL CONDUCT AND AS AN ORGANIZED BODY OF KNOWLEDGE DOES RELATE TO THE CONTENT OF INSTRUCTION AND DOES NOT ENTAIL AN ERRONEOUS INTERPRETIVE CONTEXT OF HUMAN BEHAVIOR. THUS PRACTICAL RULES OF CONDUCT AND ORGANIZED BODIES OF KNOWLEDGE BECOME VIABLE MEANINGS WITH RESPECT TO A DISCIPLINE-CENTERED CURRICULAR APPROACH. A DISCIPLINE-CENTERED CURRICULAR APPROACH SHOULD BE CENTERED IN STRUCTURE, WHICH IS NOT INCOMPATIBLE WITH SUBJECTS, PROBLEMS, OR INTERESTS AS BASES FOR ORGANIZATION OF THE CONTENT FOR LEARNING. (ES)

THE NATURE OF A DISCIPLINE-CENTERED CURRICULAR APPROACH

Social Studies Curriculum Center

Occasional Paper 64-166

Elizabeth Steiner Maccia

BERS

Acknowledgment

This paper is part of Project HS-082 supported under the Cooperative Research Program of the Office of Education, U. S. Department of Health, Education, and Welfare.

1. Purpose of the Paper

In improving the curriculum of our schools, an adequate basis must be found for the organization of the content for learning. Such a basis has been sought in subjects, problems, and interests. Today another centering for the curriculum--disciplines--is receiving widespread attention.[1] It is the purpose of this paper to explicate this centering. Stated differently, it is the purpose of this paper to delineate a discipline-centered curricular approach.

2. Meaning of 'Discipline'

'Discipline' comes from the Latin, '<u>discipulus</u>', meaning disciple. Because a disciple is one who learns ('<u>discipulus</u>' comes from '<u>discere</u>', to learn) by following the teaching of his master, in its most general sense 'discipline' means

1. instruction.

Instruction, then, is an influence relation. It involves at least one person (a disciple) related to at least one other person (a master) in a manner so that the former is influenced to change his behavior by the latter (learns by following the teaching of his master). In other words, 'instruction' is a relational term requiring two things for its exemplification--teaching and learning. Only teaching together with learning produces instruction.

---

[1]See the attached appendix which is a bibliography relating to a discipline-centered curricular approach.

Since instruction involves bringing about behavioral change, it is not difficult to ascertain how 'discipline' also means

2. regulation.

Where there is discipline in the sense of instruction, there must be regulation. In instruction, behavior is changed according to teaching. It is regulated or governed by a rule or rules. A rule is a reason or criterion which leads to one behavior rather than another behavior. It is evidenced in one way of behaving rather than another way. It is judgmental or selective in nature. Instruction, therefore, involves learning or behavioral change as regulated behavior--behavior according to rules.

Other senses of 'discipline' are specifications within discipline as instruction and as regulation. These meanings indicate modes of instruction or regulation and have come to be meanings of 'discipline'. These meanings are as follows:

3. perfection of mental faculties,
4. punishment,
5. submission to authority,
6. rules of practical conduct, and
7. organized branches of knowledge.

Little need be said about discipline as perfection of mental faculties. This meaning rests upon faculty psychology which is recognized as fallacious. Hypostatization of mental faculties which are capable of strengthening and so being perfected is considered no longer a fruitful approach. Nevertheless, it is important to mention this meaning to prevent

premature discounting of discipline as a basis for organization of the curriculum. Some might conceive discipline only in this sense, and thus reject the possibility of a curriculum centered in disciplines.

Discipline as punishment and as submission to authority relates to the motivational aspect of instruction or regulation. The student might be instructed or his behavior might be regulated, because punishment or the teacher's authority operates as a motivational basis. Since in its most general sense 'authority' means power to influence, exercise of authority could be based upon punishment or reward or position or expertise or affection or any combination thereof. Indeed, exercise of authority often takes the form of authoritarianism which implicates punishment as the motivational basis. In a less general sense of 'authority', position or expertise or both are implicated. In the least general sense of 'authority', only expertise is implicated.

Since curriculum relates to the content of instruction and not simply the motivational aspect of instruction, discipline as punishment and as submission to authority can be set aside as a viable centering for the organization of the curriculum. Moreover, it is important to note that the neglect of the content basis of instruction in relation to behavioral regulation indicates an erroneous interpretive context of human behavior. Human behavior is taken as reactive not active. Behavior is regulated by someone acting upon another. Action by someone produces a concomitant reacting by another, provided the someone has influence over the other through punishment or authority. Behavior is not regulated by the one who behaves. Content is simply what is stamped unto the

learner, because of punishment or authority. Content per se is not taken as a motivational basis. Furthermore, the non-content motivational bases are not self-imposed as rules. There is only conditioning. There is no rule-governed behavior.

Winch has presented a simple illustration which might aid in grasping the distinction between active behavior and reactive behavior as it relates to rules:

> The dog responds to N's commands now in a certain way because of what has happened to him in the past; if I am told to continue the series of natural numbers beyond 100, I continue in a certain way because of my past training. The phrase 'because of', however, is used differently of these two situations: the dog has been conditioned to respond in a certain way, whereas I know the right way to go on on the basis of what I have been taught.[2]

To the above, if the illustration is to be complete, the following should be added:

> I go on in this way because I have accepted this rule of mathematics or some other rule--such as avoidance of punishment--as a criterion of right behavior which is my reason for behaving in this manner.

The distinction between active and reactive behavior also clearly indicates that a person who is disciplined--acts according to rules-- is acting and not being acted upon. The disciplined person is a human being and is not a thing. A thing is an object which has no ends, and so simply reacts. Even punishment to regulate behavior involves active behavior, as indicated in my addition to Winch's illustration. If one contests punishment of the learner, he does so on the grounds that such a rule of

---

[2]Peter Winch, The Idea of a Social Science, London: Routledge and Kegan Paul, 1958, p. 62.

teaching is undesirable because it sets conditions so that the learner might apply an undesirable rule of behavior. Nor can there be imposition of content by the teacher. Content only can be self-imposed. One might, however, contest the reasons for such self-imposition.

The taking of human behavior and thus learner behavior as active is not a philosophical commitment. What sense would it make to accept a prescription that human beings behave humanly? A human being because he is a human being must so behave. A theory of instruction containing within it a theory of curriculum which is constructed to describe and explain only can be inadequate if it relies upon conditioning theory.

Discipline as rules of practical conduct and as organized bodies of knowledge does relate to the content of instruction and does not entail an erroneous interpretive context of human behavior. It is 'discipline' in these senses which is of significance as a centering for the curriculum.

These two senses of 'discipline' would be taken probably as meanings which distinguish the theoretical from the practical disciplines and which restrict knowledge to the former. The disciplines of instructional concern, hence, would be the organized branches of knowledge which exclude rules of practical conduct. Depending upon whether you embrace a nineteenth century or twentieth century viewpoint, the organized branches of knowledge would be either the traditionally recognized subject-matter fields including more than the sciences, e.g. literature, or the sciences alone. In either case much of the business of human living or rule-governed behavior would be outside of instructional bounds. Need we take these two meanings of 'discipline' as mutually exclusive? On what grounds

is knowledge restricted to the rules of the scientist and the rules of the other doings of the academician? Why cannot the rules of any domain of human living, even the more important practical ones, be viewed as organized bodies of knowledge?

3. Discipline-Centered Curricular Approach

In the above discussion of the meaning of 'discipline', practical rules of conduct and organized bodies of knowledge were marked off as viable meanings with respect to a discipline-centered curricular approach. Furthermore, it was suggested that rules of practical conduct and organized bodies of knowledge were not mutually exclusive terms. Rather an organized body of knowledge is a set of rules, and some organized bodies of knowledge are more practical than others. If disciplines are taken to be organized bodies of knowledge or sets of rules, what is implied in regard to a curricular approach centered in disciplines? I shall argue that a curricular approach which centers in structure is entailed.

As already stated, 'discipline' in its general sense means instruction which is an influence relation. 'Influence' comes from the Latin, '<u>infuere</u>', expressing causing to flow in. Influence, then, can be seen as a building up in the one influenced. The person influencing the building up is teaching. Learning, in the context of instruction, is taken to be a change of behavior effected by teaching. What kind of behavioral change is building up? A rare or obsolete meaning of 'structure' as action of building coupled with the usual meanings--organized body, and combination of interrelated elements--relates to the second general sense

of 'discipline', regulation. It is obvious that building up involves rules, and also that an organized body or any given combination of interrelated elements involves rules. In any structure or structuring, there are rules for putting the elements together and usually rules for specifying the elements. The behavioral change which is built up, consequently, is one in which the behavior becomes rule-governed.

Within this discipline-centered perspective of instruction emerges a discipline-centered perspective of curriculum. The content of teaching or the curriculum becomes organized bodies of knowledge or sets of rules or structures. To explicate further an organized body of knowledge as a structure and as a set of rules, consider physical science. Part of physical science is deductive structures. A deductive structure is made up of elements which are terms. In physical science, these terms have an interpretation with respect to the realm of matter and energy, because the terms are specified according to rules which are called 'semantical rules'. Furthermore, as deductive structures, formation of terms into statements and transformation of statements into other statements occurs, because formation and transformation are specified according to rules which are called 'syntactical rules'. Given the interpreted terms and thereby the semantical rules, and given the syntactical rules, one can behave as a physical scientist. One can generate knowledge about the realm of matter and energy.

A discipline-centered curricular approach, therefore, demands that the structures or sets of rules for the given domains of human living, organized bodies of knowledge, which have been selected as part

of the curriculum be made explicit. Unless these structures have been made explicit and thus can be communicated to the teacher, the teacher cannot organize the content of his teaching as disciplines.

An illustration of the discipline-centered curricular approach will be found in the project--Cooperative Research Project HS-082: Development of Economics Curricular Materials for Secondary Schools--of which this paper is a part. Meno Lovenstein, Resident Scholar in Economics, is working on the explication of structure in economics. In his own words, he is laying bare the "most basic concepts and their major relationships".[3] The explicated structure, then, will be communicated to the teacher through a guide.[4]

In order to delineate further the discipline-centered curricular approach, its relation to other approaches now will be considered. These considerations will form the next three sections of the paper.

4. Subjects and Disciplines

Some might assert that the subject-centered and the discipline-centered curricular approaches are incompatible on the grounds that the former approach restricts the content of teaching to the traditionally recognized areas of knowledge, while the latter approach does not. A subject-centered curriculum need not be so restricted, and the discipline-centered

---

[3]Special Supplement to the Newsletter of the Ohio Council on Economic Education, Ohio University, Athens, Ohio, Vol. 8, No. 3, May, 1962, p. 3.

[4]See Occasional Paper 64-167, Teacher's Guide--A Preliminary Draft by Meno Lovenstein, Social Studies Curriculum Center, The Bureau of Educational Research and Service, The Ohio State University.

curriculum could be so restricted. That is to say, a given degree of restrictiveness is not inherent in either of the two approaches, and consequently cannot be a basis of incompatibility. The degree depends rather upon what is taken to be the domains of human living which are significant and for which the schools ought to take responsibility. What should students learn? For example, should domains of human living such as health, leisure, vocations, citizenship, and the home be subjects or disciplines for the school?

Yet others might assert incompatibility on the grounds that a subject-centered curricular approach does not take into account structure. While it is true that a subject could be treated as isolated bits of knowledge and not as a structure, it is not necessary that it be treated in this manner. A subject could be treated in terms of structure. Again there is no inherent incompatibility between a subject-centered and a discipline-centered curricular approach.

In the context of this discussion, one other point should be emphasized in regard to subjects treated in terms of structure or in regard to disciplines. Any attempt to broaden the subject or discipline to include other subjects or disciplines is contingent upon explication of structures common to the subjects or disciplines. Consider that scholars see the unity of economics, history, psychology, sociology, geography, and political science as social studies to be a problemmatic goal awaiting further development of these disciplines.[5]

---

[5]Appendix A, HS-082: Development of Economics Curricular Materials for Secondary Schools, Social Studies Curriculum Center, The Bureau of Educational Research and Service, The Ohio State University, p. 6.

5. Problems and Disciplines

Some have held that a subject-centered curricular approach, even if it be a discipline-centered one, i.e. the subject is treated in terms of structure, is incompatible with a problem-centered curricular approach. Recall that the core curriculum often carries with it the idea that problems in various domains of human living rather than subjects should be the organizing center of the curriculum. As indicated above, subjects or disciplines inherently do not restrict human living to certain domains--the domains of the academician. However, there remains the question of the incompatibility of disciplines and problems.

Earlier in this paper, I have argued that human behavior is active and not reactive, and therefore any given content of teaching cannot be stamped unto the learner. The student is involved in the determination of not only whether he will respond but also in the determination of the nature of his response. Any given content, therefore, whether it is organized along discipline lines or not, is a possible context for response selection. The term 'possible' is inserted, since any given content would become actual only when a student is motivated to respond, and when the student is able to ascertain a range of two or more responses and he possesses a past response as a rule or criterion for selecting from the range. That is to say, the content itself or some extrinsic factor, as reward, must be of interest to the student, and the content must relate to the past learning of the student.

When one notes that to be a context for response selection is to be a set of alternatives or a problem[6], it becomes patent that there is no incompatibility between a discipline-centered and a problem-centered curricular approach. If disciplines enter into the teaching-learning process, they are the problems.

6. Interests and Disciplines

The discussion of problems and disciplines indicated that interest must be present if content is to produce learning. This is true irrespective of the kind of content. Nevertheless, it is not true that there is a necessary incompatibility between interests and disciplines. It is conceivable that disciplines could be or become of interest to the student. Extrinsic factors of interest, of course, would not be incompatible with any kind of content. For example, a grade can be a reward for learning structure or for learning isolated bits of knowledge.

However, if one takes an extreme position which does not include cultivation of interest with respect to a content criterion, discipline or otherwise, then incompatibility arises. This extreme interest-centered curricular approach carries with it the idea that the curriculum should be organized within the teaching-learning situation in terms solely of the interests of the students. The curriculum simply emerges in situ.

---

[6] See "An Educational Theory Model: Information Theory" in Cooperative Research Project No. 1632: Construction of Educational Theory Models by E. S. Maccia, G. S. Maccia, and R. Jewett, The Ohio State University Research Foundation, 1963.

7. Conclusion

The discipline-centered curricular approach has been delineated as one which centers in structure. Furthermore, a centering in structure is not incompatible with subjects or problems or interests (except as part of an extreme interest-centered curricular approach) as bases for organization of the content for learning.

APPENDIX

Bibliography Related to Discipline-Centered Curricular Approach

1. Ausubel, David P. "Cognitive Structure and Facilitation of Meaningful Verbal Learning," Journal of Teacher Education, Vol. 14, June, 1963, pp. 217-22.

2. _____. "Viewpoints from Related Disciplines: Human Growth and Development," Teachers College Record, Vol. 60, February, 1959, pp. 245-54.

3. Bellack, Arno A. "Conceptions of Knowledge: Their Significance for Curriculum," The Nature of Knowledge: Implications for the Education of Teachers, edited by William A. Jenkins. Milwaukee: University of Wisconsin, 1963, pp. 42-52.

4. _____. "Selection and Organization of Curriculum Content: An Analysis," What Shall the High Schools Teach? 1956 Yearbook. Washington, D.C.: Association for Supervision and Curriculum Development, 1956, pp. 97-126.

5. _____. "The Structure of Knowledge and the Structure of the Curriculum," A Reassessment of the Curriculum, edited by Dwayne Huebner. New York: Bureau of Publications, Teachers College, Columbia University, 1964, pp. 25-40.

6. _____ and Davitz, Joel R. "Implications for Curriculum Decision-making," Teachers College Record, Vol. 60, February, 1959, pp. 283-5.

7. Boardman, Gordon C. "Method and Content in Education," Wisconsin Journal of Education, Vol. 94, April, 1962, p. 17.

8. Brodbeck, May. "Toward a Fabric of Knowledge--Common Elements Among Fields of Learning," Educational Record, Vol. 43, July, 1962, pp. 217-22.

9. Broudy, Harry S; Smith, B. Othanel; and Burnett, Joe R. Democracy and and Excellence in American Secondary Education. Chicago: Rand McNally and Co., 1964.

10. Bruner, Jerome S. On Knowing, Essays for the Left Hand. Cambridge: Harvard University Press, 1962.

11. Bruner, Jerome S. The Process of Education. Cambridge: Harvard University Press, 1962.

12. _____. "Some Theorems on Instruction Illustrated with Reference to Mathematics," Theories of Learning and Instruction, The Sixty-third Yearbook of the National Society for the Study of Education, Part I, edited by Ernest R. Hilgard. Chicago, Illinois: The University of Chicago Press, 1964, pp. 306-35.

13. Caruthers, T. S. "Parents Are Paying for Subject Matter and Are Getting a Bargain," Educational Forum, Vol. 18, May, 1954, pp. 436-41.

14. Davis, O. L., Jr. "Organized Knowledge Influencing Curriculum Decisions," Review of Educational Research, Vol. 32, June, 1963, pp. 245-53.

15. _____. "The Teaching of the Disciplines and the Core Program: Some Comments and Questions," High School Journal, Vol. 44, April, 1961, pp. 239-47.

16. Denemark, G. W. "Curriculum Challenge of our Time," National Education Association Journal, Vol. 50, December, 1961, pp. 12-4.

17. Foshay, Arthur W. "Discipline-Centered Curriculum," Curriculum Crossroads, edited by A. Harry Passow. New York: Bureau of Publications, Teachers College, Columbia University, 1962, pp. 66-71.

18. _____. "Knowledge and Structure of the Disciplines," The Nature of Knowledge, edited by William A. Jenkins. Milwaukee: University of Wisconsin, 1962, pp. 28-40.

19. _____. "A Modest Proposal for the Improvement of Education," What Are the Sources of Curriculum? A Symposium. Washington, D.C.: Association for Supervision and Curriculum Development, 1962, pp. 1-13.

20. Frazer, D. M. and Pullen, T. G., Jr. "What to Teach? Curriculum Planning," National Education Association Journal, Vol. 51, October, 1962, pp. 34-6.

21. Goodlad, John I. "Changing Curriculum of America's Schools," Saturday Review, Vol. 46, November 16, 1963, pp. 65-7, 87-8.

22. _____. "Knowledge, Pre-Collegiate Education and the Preparation of Teachers: Perspectives on the National Scene," The Nature of Knowledge: Implications for the Education of Teachers, edited by William A. Jenkins. Milwaukee: University of Wisconsin, 1963, pp. 84-93.

23. Hanna, Paul R. "Structure of Knowledge: The Interrelationship of Ideas," The Nature of Knowledge: Implications for the Education of Teachers, edited by William A. Jenkins. Milwaukee: University of Wisconsin, 1962, pp. 68-82.

24. Herrick, Virgil E. "Sources of Curriculum Development," What Are the Sources of the Curriculum? A Symposium. Washington, D.C.: Association for Supervision and Curriculum Development, 1962, pp. 60-71.

25. Johnson, Earl S. "The Concept of Structure in the Social Sciences," Educational Record, Vol. 43, July, 1962, pp. 206-9.

26. _____. "Ways of Knowing," The Nature of Knowledge: Implications for the Education of Teachers, edited by William A. Jenkins. Milwaukee: University of Wisconsin, 1963, pp. 16-26.

27. Klotsche, J. Martin. "The Need for Knowing," The Nature of Knowledge: Implications for the Education of Teachers, edited by William A. Jenkins. Milwaukee: University of Wisconsin, 1963, pp. 7-14.

28. Maccia, Elizabeth Steiner. Instruction as Influence Toward Rule-Governed Behavior. Columbus, Ohio: Educational Theory Center, The Bureau of Educational Research and Service, The Ohio State University, Occasional Paper 64-155. Presented at the Eastern ASCD Research Institute, Washington, D.C., March 1-3, 1964.

29. _____. The Scientific Perspective: Only One Curricular Model, Columbus, Ohio: Educational Theory Center, The Bureau of Educational Research and Service, The Ohio State University, Occasional Paper 63-143. Presented as part of the Public Lecture Series on Content and Discipline in the Curriculum, The Graduate School of Education, The University of Chicago, July, 1963.

30. McClellan, James E. "Knowledge and the Curriculum," Teachers College Record, Vol. 57, March, 1956, pp. 410-8.

31. Miel, Alice. "Knowledge and the Curriculum," New Insights and the Curriculum, edited by Alexander Frazier. Washington, D.C.: Association for Supervision and Curriculum Development, 1963, pp. 71-104.

32. Mosier, R. D. "Logical Analysis of Subject Matter," Journal of Educational Research, Vol. 44, January, 1951, pp. 373-9.

33. National Education Association, Project on Instruction. The Scholars Look at the Schools: A Report of the Disciplines Seminar. Washington, D.C.: the Association, 1962.

34. Phenix, Philip H. "The Disciplines as Curriculum Content," Curriculum Crossroads, edited by A. Harry Passow. New York: Bureau of Publications, Teachers College, 1962, pp. 57-65.

35. Phenix, Philip H. "Key Concepts and the Crisis in Learning," Teachers College Record, Vol. 57, December, 1956, pp. 137-43.

36. _____. Realms of Meaning - A Philosophy of the Curriculum for General Education. New York: McGraw-Hill Book Co., 1964.

37. Sand, Ole and Miller, Richard I. "Perspective on National Studies in the Disciplines," Journal of Secondary Education, Vol. 38. January, 1963, pp. 27-33.

38. Schwab, Joseph J. "Structure of the Disciplines." Presented at the Fifth Annual Phi Delta Kappa Symposium on Education and the Structure of Knowledge, University of Illinois, November 4-5, 1963.

39. Shoben, Edward Joseph J. "Viewpoints from Related Disciplines: Learning Theory," Teachers College Record, Vol. 60, February, 1959, pp. 272-82.

40. Silberman, C. E. "Remaking of American Education," Fortune, Vol. 63, April, 1961, pp. 125-30, 194, 197, 198, 201.

41. Smith, B. Othanel. "Knowledge About Knowledge for Teachers," The Nature of Knowledge: Implications for the Education of Teachers, edited by William A. Jenkins. Milwaukee: University of Wisconsin, 1963, pp. 54-66.

42. _____. "The Need for Logic in Methods Courses," Theory Into Practice, Vol. 3, February, 1964, pp. 5-8.

43. Streitz, Ruth. "Subject-Matter Interpretations," The American Elementary School, Thirteenth Yearbook of the John Dewey Society, edited by Harold Shane. New York: Harper and Brothers Publishers, 1953, pp. 318-43.

44. Sutherland, Neil. "Structure in the History Curriculum," Social Education, Vol. 26, March, 1962, pp. 133-6.

45. Tyler, Fred T. "Issues Related to Readiness to Learn," Theories of Learning and Instruction, The Sixty-third Yearbook of the National Society for the Study of Education, Part I, edited by Ernest R. Hilgard. Chicago, Illinois: The University of Chicago Press, 1964, pp. 210-39.

46. Tyler, Ralph W. "The Interrelationship of Knowledge," National Elementary Principal, Vol. 43, February, 1964, pp. 13-21.

47. VanDeventer, W. C. "Use of Subject Matter Principles and Generalizations in Teaching," School Science and Mathematics, Vol. 56, June, 1956, pp. 466-74.

48. Wilhelms, Fred T. "Curriculum Sources," What Are the Sources of the Curriculum? A Symposium. Washington, D.C.: Association for Supervision and Curriculum Development, 1962, pp. 14-25.

ADDENDA

Parker, William Riley. "The Concept of Structure in English," Educational Record, Vol. 43, July, 1962, pp. 210-6.

Schwab, Joseph J. "The Concept of the Structure of a Discipline," Educational Record, Vol. 43, July, 1962, pp. 197-205.